

## II. REJECTIONS UNDER 35 U.S.C. § 112 SHOULD BE WITHDRAWN

Claims 23-34 stand rejected under 35 U.S.C. § 112, ¶2, as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. Applicants have amended the claims to overcome these § 112 rejections, and claims 23-34 are now in compliance with 35 U.S.C. § 112, ¶2.

## III. REJECTIONS UNDER 35 U.S.C. § 103(a) SHOULD BE WITHDRAWN

Claims 1-26 and 30-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nevo in view of Laster. Applicants respectfully submit that the rejection should be withdrawn for the following reasons.

In order to reject a claim for obviousness under 35 U.S.C. § 103, the prior art must teach or suggest each and every element of the claim and must also suggest combining the elements in the manner contemplated in the claim. See Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934 (Fed. Cir.), cert. denied 111 S. Ct. 296 (1990); In re Bond, 910 F.2d 831, 834 (Fed. Cir. 1990).

Claim 1, as amended, recites a method for calculating, analyzing and displaying investment data comprising the steps of:

- (a) selecting a sample space, wherein the sample space includes at least one investment data sample;
- (b) generating a distribution function using a re-sampled statistical method **and a bias parameter, wherein the bias parameter determines a degree of randomness in a resampling process;** and,
- (c) generating a plot of the distribution function.

(Emphasis added). Applicant's invention relates to a method and system for performing resampled statistical analysis of financial data, and in particular utilizing a bias parameter that controls a degree of randomness in the resampling process. Specifically, according to one embodiment, the bias parameter is a decimal value that specifies a degree of randomness to be utilized in the resampling process. For example, a value of -1 may be indicate that the resampling process should be conducted purely randomly. A value between 0 and 1 may indicate that the resampling process is biased, for example, such that b% of the samples are 'up' days and 1-b% of the samples are 'down' days, where

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$b$ =bias value. According to one embodiment (referring to FIG. 14), for example, the biasing may be carried out by separating the sample space into two sets, a first set including only 'up' days and a second set including only 'down' days. Then, a random number  $r$  between 0 and 1 is generated. If  $r \leq b$ , an 'up' day is selected. Otherwise, a 'down' day is selected. The process is repeated for each bootstrap sample.

Nevo describes a method and apparatus that enables the monitoring and analysis of financial securities markets. Financial market changes are monitored by the collection and organization of data from multiple parameters for each market segment. The system can monitor multiple data elements either horizontally, i.e., same parameters for different financial securities or vertically, different elements within the same security making up a financial securities market. A status indicator is then presented to a user in a form which conveniently conveys information about significant changes contributing to the condition of a security or financial market.

Laster does teach the advantages of the use of a bootstrap methodology for estimating a return distribution of a financial portfolio over a mean-variance approach. Specifically Laster describes constructing 10,000 bootstrap replications of five-year periods wherein the data for each replication are generated by randomly drawing (with replacement) ordered pairs of historical monthly returns of two indexes. For example, the months drawn might be February 1989, October 1976 and so forth. Summary measures of risk and return for the sixty observations are computed and recorded. After the experiment is repeated a total of 10,000 times, the results are tabulated and summarized.

However neither Nevo nor Laster taken alone or in combination teach or suggest the use of a bias parameter, wherein the bias parameter determines a degree of randomness in a resampling process. As described above, the bias parameter offers significant benefits in statistical financial analysis, among other things, allowing simulations of specific ratios of 'up' and 'down' days. For example, a value between 0 and 1 may indicate that the resampling process is biased, for example, such that  $b\%$  of the samples are 'up' days and  $1-b\%$  of the samples are 'down' days, where  $b$ =bias value.

The Examiner cites FIGS. 2-3 of Nevo as teaching the use of a bias parameter. However, these figures do not show such a parameter and, insofar as Nevo does not relate to a bootstrapping or resampling methodology, these figures are not relevant to the

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concept of a bias parameter.

For the above reasons, claim 1 as amended is not rendered obvious in view of the applied prior art references. Claims 2-7 and 9-11 depend from, and therefore include all the limitations of, claim 1. As such, the Examiner's § 103 rejections should be withdrawn with respect to claims 1-7 and 9-11.

Claim 12 has been amended to incorporate the use of a bias parameter in a resampling process for investment data. For the same reasons stated above with respect to claim 1, claim 12 is not rendered obvious in view of the applied prior art references. Claims 13-22 depend from, and therefore include all the limitations of, claim 12. As such, the Examiner's § 103 rejections should be withdrawn with respect to claims 12-22.

Claim 23, as amended, recites a system for providing statistical analysis of investment information over an information network comprising:

- a financial data database for storing investment data;

- a client database;

- a plurality of processors collectively arranged to perform a parallel processing computation**, wherein the plurality of processors is adapted to:

  - receive a statistical analysis request corresponding to a selected investment;

  - based upon investment data pertaining to the selected investment, **perform a resampled statistical analysis** to generate a resampled distribution; and,

  - provide a report of the resampled distribution.

(Emphasis added).

According to one embodiment of the present invention, a parallel processing architecture is employed to carry out the resampling process. A significant advantage provided by the parallel processing scheme is the significant advantages derived from vectorizing the data. The parallel processing architecture provides at least two significant advantages over conventional methods for performing bootstrap or resampled statistical functions. First, the architecture permits the delivery and processing of financial data in compressed time frames, which facilitates "real time" or "near real time" statistical analysis. In addition, the parallel computation provides the ability to perform statistical

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analysis on a large number of financial entities (e.g., a mutual fund or a hedge fund) through a weighting process. An exemplary parallel processing architecture for carrying out a resampled statistical analysis of financial data is depicted with reference to FIG. 2. Furthermore, FIGS. 11-12 are flowcharts depicting the overall operation of a parallel processing scheme with respect to resampled statistical analysis of financial data.

Neither Nevo nor Laster taken alone or in combination teach or suggest the use of parallel processing architecture and process for performing resampled statistical analysis of financial data.

For the above reasons, claim 23 as amended is not rendered obvious in view of the applied prior art references. Claims 24-29 depend from, and therefore include all the limitations of, claim 23. As such, the Examiner's § 103 rejections should be withdrawn with respect to claims 23-29.

Claim 30 describes a system for performing statistical analysis of investment information utilizing a resampled statistical analysis process and specifically includes the claim element of a parallel processor. Thus, for the same reasons stated above with respect to claim 23, claim 30 is not rendered obvious in view of the applied prior art references. Claims 31-32 depend from, and therefore include all the limitations of, claim 30. As such, the Examiner's § 103 rejections should be withdrawn with respect to claims 30-32.

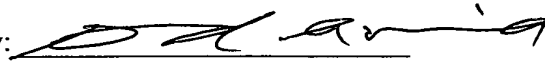
IV. CONCLUSION

In light of the foregoing, Applicants respectfully submit that all of pending claims 1-7 and 9-32 are in condition for allowance. Prompt reconsideration and allowance of the present application are therefore earnestly solicited.

Respectfully submitted,

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